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Guang-Zhong Yang

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EXAMINER

KONG, SZE-HON

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/529,023	<b>Applicant(s)</b> YANG ET AL.	
	<b>Examiner</b> SZE-HON KONG	<b>Art Unit</b> 3661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 September 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,4-15 and 17-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,4-15 and 17-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments filed 9/24/2009 have been fully considered but they are not persuasive.

On pages 8-9 of the Applicant's Response, Applicant argues Borst relies on either fixed landmarks or placed markers that limit the locations for tracking and does not consider the user's fixation point and therefore is distinguishable from the claimed invention and Guyton fails to cure the deficiencies of Borst where it does not suggest or hint at using a determined fixation point to sense motion in the object being looked at and only control based on the fixation of a user's eye to affect the positioning of a camera, or surgical instrument and does not suggest that the fixation point of a user's eye be used to sense motion in the object of interest.

The Examiner respectfully disagrees with the Applicant. Claim 1 was amended to include tracking a visual fixation point of a user. Borst alone does not teach the amended limitations in claim 1. While Borst teaches tracking motion of a region of an object and manipulating a robotic manipulator for a user, Guyton teaches tracking the eyes of the user for fixation points and able to manipulate devices including surgical equipments and instruments. The tracking of the fixation point of a user's eyes obviously tracks and sense the motion of the point of interest of the user. It wouldn't make sense that the user's fixation point is fixed and unchanged when the user is gazing at his/her point of interest.

On page 9 of the Applicant's Response, Applicant argues the combination of Borst and Guyton would only provide a system using landmarks or markers for motion tracking and fixation points for directing the camera because the markers on the image must never disappear and Guyton suggests the move of the camera would move the markers off the image. Also, the cameras must be static for the system of Borst to function correctly.

The Examiner respectfully disagrees with the Applicant. It would not be logical for one of ordinary skill in the art to combine the teachings of references in the same field of the art that would not be operable. It is not logical when Guyton is known to track the fixation point of the user to track movements of the user's eyes to not use this feature in place of tracking with markers, taught by Borst. Guyton is obvious to provide more flexibility for user control and Borst is obvious to provide a system and environment for robot manipulations, object tracking and surgical procedures. One of ordinary skill in the art would not combine features from known arts that would prevent product that would not work.

On page 10 of the Applicant's Response, Applicant argues Jones is unrelated and is "non-analogous art and should be removed as a reference because a skilled person would not have combined Jones with Borst" and the combination would limit to a certain volume based on gaze tracking.

The Examiner respectfully disagrees with the Applicant. Jones teaches also discloses an eye tracking system that tracks a user's gaze and presents a 3-dimensional presentation, measuring user's fixations point that is in the same

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field on invention. As for the alleged combination of the references suggested by the Applicant, it is not required that the prior art disclose or suggest the properties newly-discovered by an applicant in order for there to be a prima facie case of obviousness. See *In re Dillon*, 919 F.2d 688, 16 USPQ2d 1897, 1905 (Fed. Cir. 1990). Moreover, as long as some motivation or suggestion to combine the references is provided by the prior art taken as a whole, the law does not require that the references be combined for the reasons contemplated by the inventor. See *In re Beattie*, 974 F.2d 1309, 24 USPQ2d 1040 (Fed. Cir. 1992); *In re Kronig*, 539 F.2d 1300, 190 USPQ 425 (CCPA 1976) and *In re Wilder*, 429 F.2d 447, 166 USPQ 545 (CCPA 1970).

On page 11 of the Applicant's Response, Applicant argues "Borst even teaches away from a combination with Guyton or Jones" and states the teaching of other users may be looking at the same image through operating spectacles and alleged that by doing so would affect the view of others, each controlling the movement of the fixation point or camera and therefore fails to "disclose or suggest the claimed step of using fixation point tracking to infer motion".

The Examiner respectfully disagrees with the Applicant. The Applicant is reading texts from the disclosure of Borst out of context and suggests a non-working scenario that Borst does not disclose. Borst teaches "the endoscopic operating procedure can be closely followed by all in 3-D" (page 19, 5-6) which teaches a way that the view of the operation can be shared by others, but not the control of the operation. It would not be logical and obviously unsafe to allow

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multiple operators to control the same device to operate on a patient simultaneously. In fact, disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments. In re Susi, 440 F.2d 442, 169 USPQ 423 (CCPA 1971).

2. Applicant's arguments with respect to claims 1, 4-15 and 17-22 have been considered but are moot in view of the new ground(s) of rejection and newly found reference.

### ***Claim Objections***

3. Claims 6, 13 and 21 are objected to because of the following informalities:

The term "the three dimensional position" (claim 6, line 1-2) should read "a three dimensional position" to correct antecedent basis.

The term "a visual fixation" (claim 21, line 2) should read "the visual fixation point" to correct antecedent basis.

For claims 6 and 13, Applicant amended these claims to depend on claim 3 which, is now cancelled. The examiner believes the Applicant meant to depend these claims on claim 1. The rejection below is interpreted as such.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 4, 5, 7-10, 12, 13, 15, and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Borst et al. (WO 95/01757) and Guyton et al. (6,027,216).

As per claims 1, 4 and 8, Borst et al. discloses the claimed remote controlled robotic manipulator for manipulating a moving object comprising a motion sensor for sensing motion of a region of an object to be manipulated, and a controller for locking motion of the robotic manipulator relative to the region of the object based on the sensed motion (Page 1, lines 9-17; Page 8, line 10 – Page 9, line 34; Page 10, lines 1-5; Page 10, lines 15-24; Page 11, lines 5-29; Page 22, line 32 – Page 23, line 14). Borst et al. further discloses the claimed manipulator in which the user views a remote representation of the object (Page 14, line 34 – Page 15, line 1; Page 17, lines 18-22; Page 19, line 30 – Page 20, line 5). The region is within a human undergoing surgery and wherein the object is a tissue that is the subject of the surgery (Page 7, lines 16-20; Page 12, line 31 – Page 13, line 5; Col. 22, lines 22-26).

Borst et al. does not explicitly disclose the claimed motion sensor is arranged to track a visual fixation point of a user to sense motion. Guyton et al. in the same field of invention discloses the claimed motion sensor tracking the visual fixation point of the user (Col. 20, line 45 - Col. 21, line 8; Col. 35, lines 43-46; Col. 35, lines 54-57; Col. 36, lines 34-36). From this teaching of Guyton et al., it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teaching so Borst et al. and Guyton et al. in order to assess the direction of fixation of an eye (Guyton et al., Col. 3, lines 66-67) to track and sense the motion of a region of an object.

Guyton et al. discloses eyes tracking apparatus, tracking and adjusting the movement of the camera corresponding to the movement of the fixation of the eyes of the user. Further discloses the eye tracking apparatus can be used for remote control manipulation of external devices, such as remote controlled surgical instruments as cited above. Borst et al. discloses the tracking of a region with motion sensing with stereo imaging, remotely manipulate a manipulator in a surgical environment. It would have been obvious for one of ordinary skill in the art to combine the teachings of these related inventions to easily arrive at the presently claimed invention.

As per claims 5, 7, 9, 10, 12, 13, 15, and 18-20, Borst et al. further discloses the claimed manipulator wherein the region is within a human undergoing surgery and wherein the object is a tissue that is the subject of the surgery (Page 7, lines 15-20; Page 12, line 31 - Page 13, line 5; Page 22, lines 22-26). Borst et al. further discloses the claimed observing a stereo image formed by visually superposing mono images, comprising the steps of presenting one mono image to each user eye to form the stereo image (Fig. 4; Page 17, line 18 – Page 18, line 14; Page 21, lines 9-17). Borst et al. further discloses the claimed manipulator comprising left and right LCD displays that display left and right images (Page 35, lines 33-34). Borst et al. further discloses wherein the mono images are obtained from sensors that are observing a human body as part of a surgery (Page 1, lines 9-17). Borst et al. further discloses the claimed stereo image comprising first and second displays for displaying mono images, a stereo image presentation module for visually super-posing the mono images to form the stereo image (Fig. 4; Page 17, line 18 – Page 18, line 14; Page 21, lines 9-17).



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Borst et al. does not explicitly disclose the claimed motion sensor tracking the visual fixation point of the user, wherein the controller determines the region of the object based on a signal from an eye tracking apparatus that tracks a visual fixation point of one or more eyes of a user, wherein the eye tracking apparatus identifies the visual fixation point of the user and tracking the fixation point of each eye, and an eye tracker for tracking the fixation point of each eye. Guyton et al. in the same field of invention discloses the claimed motion sensor tracking the visual fixation point of the user, wherein the controller determines the region of the object based on a signal from an eye tracking apparatus that tracks a visual fixation point of one or more eyes of a user, wherein the eye tracking apparatus identifies the visual fixation point of the user and tracking the fixation point of each eye, and an eye tracker for tracking the fixation point of each eye (Col. 20, line 45 - Col. 21, line 8; Col. 35, lines 43-46; Col. 35, lines 54-57; Col. 36, lines 34-36). From this teaching of Guyton et al., it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teaching so Borst et al. and Guyton et al. in order to assess the direction of fixation of an eye (Guyton et al., Col. 3, lines 66-67) to track and sense the motion of a region of an object.

Guyton et al. discloses eyes tracking apparatus, tracking and adjusting the movement of the camera corresponding to the movement of the fixation of the eyes of the user. Further discloses the eye tracking apparatus can be used for remote control manipulation of external devices, such as remote controlled surgical instruments as cited above. Borst et al. discloses the tracking of a region with motion sensing with

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stereo imaging, remotely manipulate a manipulator in a surgical environment. It would have been obvious for one of ordinary skill in the art to combine the teachings of these related inventions to easily arrive at the presently claimed invention.

6. Claims 6, 11, 14, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Borst et al. (WO 95/01757) and Guyton et al. (6,027,216) as applied to claims 1, 5, 8, and 13 above, and further in view of Jones et al. (EP 1056049 A2).

As per claims 6, 11, 14, and 17, the combination of Borst et al. and Guyton et al. does not explicitly disclose the claimed eye tracker determines a three-dimensional position of the visual fixation point. Jones et al. in the same field of invention discloses the claimed eye tracker determines a three-dimensional position of the visual fixation point (Paragraphs [0014]-[0021]). From this teaching of Jones et al. it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings of Borst et al., Guyton et al., and Jones et al. in order to calculate the region of space within the dataset that the user is looking at (Jones et al., Paragraph [0016]).

7. Claims 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Borst et al. (WO 95/01757) and Guyton et al. (6,027,216) as applied to claims 1 and 18 above, and further in view of Isonuma (6,611,283).

As per claims 21 and 22, Borst et al. discloses the stereoscopic video imaging allow the surgeon to see depth of the subject of interest (Page 17, lines 18-22), but does not specifically disclose the motion sensor is arranged to determine a depth of the visual fixation point and the depth is determined by an angle of a gaze of the user's

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eyes. Isonuma discloses an eye tracking apparatus detecting the motion of each eyes of the user to determine the depth of the visual fixation point by an angle of a gaze of the user's eyes (Abstract, Col. 3, line 12 - col. 4, line 8, col. 5, lines 12-23 and col. 7, line 62 - col. 8, line 12). It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the invention of Borst et al. to detect the depth of visual fixation point by an angle of a gaze of the user's eyes in eye motion tracking, taught by Isonuma to accurately determine the position/depth of a point of interest of the user to perform operation.

### ***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to SZE-HON KONG whose telephone number is (571)270-1503. The examiner can normally be reached on 7:30AM-5PM Mon-Fri, Alt. Fri. Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Black can be reached on (571) 272-6956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

1/14/2010

/SZE-HON KONG/  
Examiner, Art Unit 3661

/Thomas G. Black/  
Supervisory Patent Examiner, Art Unit 3661